CLAIMS

1. An electrode substrate in which a lower electrode, an insulating film having lyophobic/lyophilic regions on a surface thereof and an upper electrode are layered sequentially on a substrate, characterized in that:

the lower electrode has a pattern approximately aligned with that of the lyophobic region on the surface of the insulating film;

the upper electrode is formed mainly on the lyophilic region other than the lyophobic region on the surface of the insulating film; and

the upper electrode has a self-aligned pattern in which the pattern of the lower electrode is approximately inversed.

2. A thin film transistor comprising the electrode substrate according to Claim 1 and a semiconductor film, wherein the electrode substrate is characterized in that a gate electrode is formed as the lower electrode, and a source electrode and a drain electrode are formed as the upper electrode on two or more areas of the lyophilic region separated by the lyophobic region formed on the surface of the insulating film in a pattern approximately aligned with that of the lower electrode so that the upper electrode has, in a self-alignment manner, an approximately inversed pattern of the gate electrode as the lower electrode, the thin film transistor being characterized

in that:

the semiconductor film is formed so that the semiconductor film covers and extends across at least a part of each of the following members on said electrode substrate: the source electrode, drain electrode and the surface of the insulating film (the gate electrode region) interposing therebetween.

3. An active matrix thin film transistor substrate comprising the electrode substrate according to Claim 1 and thin film transistors, wherein in the electrode substrate, a plurality of gate wirings/electrodes are formed as the lower electrode, and a plurality of signal wirings, a plurality of source/drain electrodes and a plurality of pixel electrodes are formed as the upper electrodes on a plurality of areas of the lyophilic region separated by the lyophobic region formed on the surface of the insulating film in a pattern that is approximately aligned with that of the lower electrode, wherein the semiconductor films of the thin film transistors are formed so that the semiconductor films extend to cover astride at least a part of each of the following members on the electrode substrate: the source electrodes, drain electrodes and lyophobic regions (gate wiring/electrode regions), on the surface of the insulating film, interposing between the source electrodes and the drain electrodes, and wherein the thin film transistors are each disposed at any one of

the intersection portions between the gate wiring and signal wiring.

4. The active matrix thin film transistor substrate, according to Claim 3, characterized in that:

a plurality of gate wirings/electrodes are formed adjacently to each other as the lower electrodes, wherein the gate wirings/electrodes are characterized by having a shape in which a plurality of adjacently disposed ring-shaped rectangles each having an opening are connected to each other at least at one or more locations;

signal wirings and source/drain electrodes are continuously formed as the upper electrodes in a self-alignment manner in the spaces between said rectangles so as to extend across the connection parts between said rectangles; and

the pixel electrodes each are formed in one of the ring-shaped openings of said rectangles.

5. The active matrix thin film transistor substrate, according to Claim 4, characterized in that the widths of the connection parts connecting the plurality of rectangles, forming individual gate wirings/electrodes, each having one of the openings and the widths of the spaces between the plurality of gate wirings/electrodes are smaller than the separations between the plurality of rectangles each having one of the openings forming said individual gate wirings/electrodes.

6. A liquid crystal, electrophoresis, or organic electroluminescence display device, characterized by using the thin film transistor substrate according to any one of Claims 3 to 5 as an active matrix switch.

7. An RFID device, characterized by using the thin film transistor according to Claim 2 as at least a part thereof.

8. The electrode substrate, thin film transistor and active matrix thin film transistor substrate, according to Claims 1 to 3, characterized by using a photosensitive lyophobic monolayer film comprising a carbon chain in which at least a part thereof is terminated with a fluorine or hydrogen atom as a photosensitive lyophobic film.

9. A method for forming the electrode substrate, thin film transistor, and active matrix thin film transistor substrate according to Claims 1 to 5, comprising:

laminating a lower electrode, an insulating film and a photosensitive lyophobic monolayer sequentially in this order on a substrate;

removing the photosensitive lyophobic monolayer from the surface of the insulating film at portions not masked by the gate electrode by backside exposure to form a lyophilic region, wherein the photosensitive lyophobic monolayer film is processed so that the pattern thereof is approximately aligned with that of the lower electrode; and

coating and baking a liquid material (conductive ink) containing at least one of a metallic ultrafine particle material, a metal complex and a conductive polymer to form an upper electrode mainly on said lyophilic region.

10. A method according to Claim 9 for forming the electrode substrate, thin film transistor, and active matrix thin film transistor substrate according to Claims 1 to 5, comprising:

adjacently disposing a substrate, on a surface of which a photocatalytic material comprising titanium oxide, nitrogen-doped titanium oxide, strontium titanate or the like that displays photocatalysis with a light having a wavelength that transmits through the substrate, insulating film and photosensitive lyophobic film, but does not transmit through the lower electrode, on a surface of a light-transmitting substrate on which a light-nontransmitting lower electrode, a light-transmitting insulating film and a photosensitive lyophobic film are layered sequentially in this order; and

decomposing and removing the photosensitive lyophobic film by the photocatalysis by the photocatalytic material that absorbs the light transmitting through the substrate, insulating film and photosensitive lyophobic film by the backside exposure to be subjected to pattern fabrication into a pattern having a shape approximately the same shape as that of

the lower electrode.

11. The electrode substrate, thin film transistor, and active matrix thin film transistor substrate according to Claims 1 to 5, characterized in that at least one of the substrate and the insulating film is formed with a material that does not transmit a light having a photosensitive wavelength of the photosensitive lyophobic film.